

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 1-4, 7, 9, 11-13, and 15-20. Applicant's amendments have obviated the outstanding rejections over Greenbaum, Asahina et al., and JP '840. However, claims 1-4, 7, 9, 11-13, and 15-20 are newly rejected under 35 USC 103 as necessitated by the amendments. Accordingly, this action is made final.

### ***Claim Rejections - 35 USC § 103***

2. Claims 1-3, 9, 11-13, 15-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-115647 in view of JP 9-259840.

JP '647 is directed to a sealed lead-acid battery comprising a container (1) (rigid structural shell) made of polypropylene and reinforced with discrete metallic flat portions (8, 9) embedded therein (see abstract). The container comprises an opening on the top surface thereof and the battery is covered with a lid (2). Regarding claims 15 and 16, the lid is "melt-bonded," i.e., welded onto the container (see abstract) and the lid has electrical connections (6) therethrough. Regarding claim 17, the connectors may be considered to be "reinforcement metallic portions" that are "lined at least in part" with the synthetic material of the cover.

JP '647 does not expressly teach that the battery comprises an inner lining substantially impervious to oxygen and humidity, as recited in claim 1.

JP '840 is directed to a lead-acid or alkaline secondary battery (see [0001] of translation). The battery comprises a jar (rigid structural shell) comprising a plastic such as polypropylene (see abstract). A liner made of vinylidene chloride resin is joined to the inner surface of the structural shell (see abstract). The liner is impervious to oxygen and humidity (see [0010]). The liner may further comprise additional layer(s) of synthetic material see [0018]).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the vinylidene chloride lining of JP '840 in the battery of JP '647. In the abstract, JP '840 teaches that the problem solved by the invention is "to improve gas barrier property" of the sealed secondary battery. Accordingly, the artisan would be motivated to use the vinylidene chloride lining of JP '840 in the battery of JP '647, thereby resulting in the liner being joined onto the inner surface of the shell, as claimed.

Regarding claims 11-13, these claims recite a fastening structure comprised of perforations in the metal and mating projections in the plastic. This structure would be obvious to a person of skill in the art, since the artisan would be sufficiently skilled to join either metal portion (8 or 9) to the polypropylene by any means known, including fastening with perforations. As such, the claimed structure is not seen to patentably distinguish over the references.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-115647 in view of JP 9-259840 as applied to claims 1-3, 9, 11-13, 15-18, and 20 above, and further in view of Langan et al (U.S. Patent 6,838,209).

Neither JP '647 nor JP '840 expressly teaches that the lining laminate comprises a layer of synthetic material and a layer of metallic material, as recited in claim 4.

In column 2, line 42, et seq., Langan et al. disclose battery packaging material comprising a laminate of a synthetic material and a metal foil.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to incorporate a metal foil into the laminated inner liner of JP '647/JP '840. In column 2, line 65, it is disclosed that the metallic foil is "impervious." Accordingly, since the purpose of this foil is the same as the purpose of the liner of JP '840, it would be obvious to incorporate the metal foil layer into the laminate to further increase imperviousness of the liner.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-115647 in view of JP 9-259840 as applied to claims 1-3, 9, 11-13, 15-18, and 20 above, and further in view of Kilb (U.S. Patent 5,789,096).

JP '647 does not expressly teach that the shell material is reinforced with carbon or glass additives, as recited in claim 7.

In column 7, lines 29-32, Kilb teaches that a battery casing made of plastic is reinforced with materials including glass and carbon.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because a particular known technique (reinforcing a plastic battery case with glass or carbon) was recognized as part of the ordinary capabilities of one skilled in the art. Further, Kilb teaches that such reinforcement improves the strength properties of the battery case. Accordingly, the artisan would be motivated to incorporate the glass or carbon additive of Kilb into the shell of JP '647.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 62-115647 in view of JP 9-259840 as applied to claims 1-3, 9, 11-13, 15-18, and 20 above, and further in view of Yamazaki et al (U.S. Pre-Grant Publication No. 2004/0029001).

JP '647 does not expressly teach that the shell is made of epoxy or urethane, as recited in claim 19.

In [0783], Yamazaki et al. teach that a hard outer battery case (51a) can be made of polypropylene or polyurethane, among other resins.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the substitution of one known element (polyurethane of Yamazaki et al.) for another (polypropylene of JP '647) would have yielded

predictable results to one of ordinary skill in the art at the time of the invention. Accordingly, the subject matter of claim 19 would be rendered obvious.

### *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the

organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

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/Jonathan Crepeau/  
Primary Examiner, Art Unit 1795  
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